1817

Compound Fractures

by Saõ Parke Street

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Preface

After mature deliberation, on the subject of an inaugural essay, the writer of the following sheets, was induced to renounce all speculation and theorizing, considering that the opinions of a youth, could not attract sufficient notice, and would most likely be treated as the vagaries of a vain imagination, and prove tiresome to those who have, the task of perusing, a number of these productions.

He was induced therefore to chuse a practical subject, where plain matter of fact would

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alone fill the pages. He has not the vanity to suppose that he has thrown any light, on the subject, of which he treats, all that he can boast of is having collected the opinions of some of the most eminent surgeons of modern times and presenting, in a condensed form, the information obtained from a careful and attentive perusal of their excellent works, and from attending the impromptu lectures, of that eminent Surgeon, who fills the chair appropriated to that useful branch of the healing art in this University, with so much credit to himself and advantage to his numerous hearers.

His design is not to teach but merely, to comply with the ordinances of an institution of which he is proud to consider himself an alumnus

Sensible that a Critic would find much employment in reviewing this little piece, he cannot but congratulate himself on the reflection

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that men of liberal and philosophic minds to whom only it will be presented, will not expect excellence, but consider it as the production of a youth, who had his wishes alone actuated him would never have obtruded himself on their notice.

It will be seen that he has made free with the works of Messrs Pole, Bell, & Drs Lawrey and Dorsey to which he has been indebted for the information acquired on this subject

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Introduction

The human body, from the manner of its formation, and the prospect of the primeval curse, is subject to various accidents which tend to disorganize and destroy the different parts of which it is composed.

Compound Fractures form a very considerable portion of these accidents, and those persons who generally are most liable to them are found among the useful classes of artizans, and labourers to whom we are under obligations for the numerous necessaries and comforts of life, which we daily enjoy- and it becomes those to whom more auspicious circumstances, may have granted an exemption, from labour and the means of cultivating science, to endeavour to alleviate the sufferings of their less fortunate brethren. accordingly we find the art of Surgery, attracting

attention from early ages and succesive improvements have brought it to its present excellent though still imperfect state.

A Compound Fract

ure is universally allowed to be a fracture of a bone having a communication with a wound of the contiguous soft parts, which creates the danger for an extensive wound without such a communication, will not affect the fracture while a puncture even which pierces down to it will render the cure difficult and hazardous.

This kind of Fracture is produced perhaps more frequently than otherwise, by the same cause which produced the simple fracture, but it has happened in the cure of simple fractures, that the bone has been protruded through the integuments either from a sharp pointed end, wearing them away or

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ing down the upper fragment of bone.

On the occurrence of an accident of this kind, we should first attend to the hemorrhage, and then consider whether from the appearance of the limb, the state of the parts &c, an attempt at pre
servation, would be warrantable, or from the na
ture and extent of the injury, immediate am-
putation would not be the most adviseable practice.

In private practice, where the patient has the advantages of rest, ease, due attention from the Surgeon, and the comforts of life, with careful nursing &c the case must be bad indeed when we have recourse to the knife.

On the other hand, in the hurry and tumult of a Battle, by Land or Sea, where from the most reasonable calculations, the patient cannot have these conveniences, singularly favourable appear.

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-ances must be present to justify the Surgeon who would attempt to save the limb. Many cases happen in private practice, where from heavy and broad wheels or other weighty substances, running over or falling on a limb the bone or bones, are comminuted and splintered, and the soft parts lacerated, and mashed, so that their texture is completely destroyed and when there is a prospect of Gangrene and Mortification, from such destruction, being the inevitable consequence, the Surgeon is obliged to perform and the patient must compose himself and submit to amputation, as his only chance for life.

No other resource can present itself when in Battle, a Cannon shot takes off a limb than to amputate the stump, or when it is not entirely separated, but is only connected by a small portion of the surrounding soft parts. Compound Fractures are sometimes cured in Military hospitals and under the most unpromising circumstances

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and in private practice, we frequently find it to be the case that the obstinacy of the patient or the indecision of the surgeon, has deferred the amputation, and contrary to what might have been expected, the patients limb has been secured to him. But would it not be unfair to draw conclusions from the successful result of a few favoured cases to the exclusion of an established rule which claims for its basis, observation and experience.

Mr Pott, (whose excellent writings sufficiently attest his sound judgement, and complete acquaintance with the subject of Surgery) seems to think that generally when a compound fracture, of the humerus or femur, or of both bones of the leg or forearm, occurs in an engagement, that recourse must be had to immediate amputation, and in private practice seems to incline to the contrary, unless very untoward circumstances present themselves. Mr Benj. Bell substantially agrees with him, and

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and the celebrated Larrey (whose experience in military surgery may be considered superior to that of almost any other writer and whose brilliant genius will illuminate the records of surgery for ages yet to come.) seems to be a friend to early amputation, no doubt he might think with the other respectable writers I have mentioned in cases occurring to private practitioners his cases imperiously required the bold and masterly treatment they received from him, and though we find his knife in frequent use, yet many cases may be cited to shew that he knew well when to forbear, and did not wantonly from a desire to shew his skill in using cutting instruments, deprive his patients of their limbs Mr. Bell speaking of cases of compound fracture which occur in private practice, appears to think that the postponement of amputation should in general be advised, and of

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the cases which have come under his observation says the greater part did best when the operation was deferred until necessity compelled its employment than when it took place immediately.

Among the causes producing an unfavorable result, he enumerates, 1st the fever produced by the extensive wound, 2nd the perturbation and violent agitation, which the unexpected loss of a limb must always induce, & lastly the great change produced in the circulating system by its removal, this state of body and mind incapacitates the patient for undergoing an operation, of such importance, while the loss regimen to which a preservative attempt necessarily reduces the patient, and his own reflections come in to our assistance, he being by this time convinced of its necessity.

Mr. Bell states this as the result of his ex

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-perience, it is hard to oppose facts, but I with the greatest diffidence, venture to observe that the reasons assigned by him, for delaying amputation, do not seem to be sufficiently cogent, 1st. the Fever from the large wound, may we not ask would not this fever be increased by suffering the continuance of the exciting cause? 2d. the agitation would in all probability be enhanced by the poor patients disappointment, at being at last obliged to lose his limb, after having had reason to believe, from the Surgeon's not performing the operation immediately, that his limb would not be lost, 3d the change in the circulating system, I think meets us with equal force in the delay, and I cannot agree that the patients reflections, will be a powerful auxiliary for it is an undoubted fact that soldiers bear operations of all kinds, better immediately af-

-ter the accidents which render them necessary may we not reasonably conclude, that men in private life would be very apt to do the same? I would not be understood as advocating a general use of the knife, but only decision in its employment when it is imperiously required for as our respectable Professor of Surgery very feelingly observed in a late lecture "I am not so very fond of cutting instruments".

All practitioners agree that when amputation has not been performed immediately several days must elapse according to the violence and duration of the inflammatory symptoms, before it can be prudently resorted to.

It may be rendered necessary by various causes afterwards — Hemorrhage I find in some authors enumerated as one — particularly when the posterior tibial artery happens to be wounded but the ingenuity of Dr. Physick has placed in the

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hands of the Surgeon a contrivance which bids fair to supercede all necessity on that score. The next is Mortification, and lastly the delay of reunion, of the fractured ends of the bones, connected with a copious discharge of matter, of hazardous import to the patients strength. These will be considered after the means advised for the preservation of the limb, shall have been noticed.

After it has been determined to make an effort to save the limb, all extraneous matters, and small detached peices of bone, (if any) should be removed, and the wound enlarged, if too small for their convenient extraction. The next consideration is the reduction of the fracture.

Perhaps more frequently than otherwise, the upper fragment is protruded and in extension, is more tightly girded than before by the

surrounding teguments, this when broad at the base, and in such condition as to afford a reasonable expectation of reunion if properly replaced, should by well fixing it be allowed the chance, by varying the position of the limb and if necessary making a clean incision; but on the contrary when an extremely sharp, jagged portion, has been forced through, and may be supposed if reduced to be productive of only pain and irritation, and thereby endanger the safety of the limb, the saw will be very properly employed for its complete removal, or any other instrument such as bone nippers, as may best suit the surgeon.

The idea of making an incision, for the purpose of reducing a fragment of bone, may appear cruel and unnecessary to some, and is unpleasant to all, but when it recollected that it is only through the skin we have to cut

for the most part, and should it become necessary to carry the incision into the muscles, that we cut as much as possible in the direction of their fibres, and as it is well known that a free incision heals more readily than even a small puncture, there surely can be no reasonable objection to it.

Having dilated the wound (if necessary) removed loose pieces of bone &c we reduced the fracture, and place the limb in the best posture, which should combine the advantages, of keeping the fragments in complete apposition, ease to the patient, and a convenient access to the wound, a dressing may be applied.

As I cannot expect to express myself with such clearness, I must beg the indulgence of a quotation from Doctr. Dorsey's excellent work here.

"We are always to keep in mind, the great importance of uniting the wound, by the first intention,

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and thereby convert the accident to the nature of a simple fracture, by which much danger and suffering will be prevented. Whatever circumstances therefore can keep the parts in a situation favourable for union by the first intention, are to be strictly observed of course whatever can prevent the inflammation from to ascending the adhesive grade; copious bloodletting is often necessary in these cases"

In fractures occasioned by Gunshot, and in others where union by the first intention, is impracticable, and suppuration must take place, from the extensive contusion and laceration of the surrounding flesh, a soft poultice of bread and milk, should be applied."

It will be necessary during the continuance of the suppuration, to dress the wound every day at least, and I have seen a case, in which on account of the warm weather, and also from

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animalculæ, produced from the eggs deposited by Blue flies becoming very troublesome, the nurse was obliged to drop 2 or 3 times in the twenty four hours. To a profuse a discharge will require the poultices to be laid aside, and the patients strength will need support, the matter must have free escape, and if necessary an opening must be made in a more depending part, (especially if it happen (as it often does) that a detached peice of bone, which escaped the previous notice of the surgeon, be the cause of this discharge, which is inconceivably great, & disagreable and renders the cure tedious in the extreme,) as it will serve for its expulsion.

With respect to this poofuse discharge, it may be observed that from an idea that great weakness is to follow a copious discharge of pus many surgeons do not carry the antiphlogistic plan to an useful extent at first, wishing to

keep the patients strength in reserve, and thus by permitting a great degree of inflammation to supervene, produce the very evil they were anxious to guard against — a due medium is to be preserved.

After all our care and attention, to severe cases of compound fracture, which are accompanied with copious discharges, let our treatment be ever so judicious, it not unfrequently happens that the patients strength is in danger from this discharge, and amputation becomes the only alternative. Sir Jas. Earle mentions as a remarkable circumstance that he has never seen it necessary to amputate, in this case when the bone has been united, the fragments were always found separate and disjoined.

A strict attention to the patients pulse and general health, his digestion &c, and likewise to

the state of his limb, is necessary and the absence of febrile complaint, hardness, tumefaction, and inflammation, with a low, and weak pulse, languor, want of appetite, with copious flow of pus, from the wound, will be the signal for a vigorous employment of all his means for the restoration of the patients strength, and that of his limb, and success will sometimes very unexpectedly crown his efforts.

Satisfied with having made an earnest, and a reasonable attempt at saving the limb, both he and his patient, will afterwards regard amputation with considerably less reluctance.

When no reunion takes place between the extremities of the fractured bone, we can try the valuable improvement of Dr Physick, with great expectations of success (the seaton) - but as the soft parts sometimes present a great obstacle

by getting between the fractured ends, as related by Dr. Dorsey - would not cutting upon, and trimming the ends of the bone be preferable to amputation, in a case so circumstanced. Dr Physick's seaton will undoubtedly have the preference in all cases in which it can be employed, but we speak hereafter in which it has been found ineffectual.

Dr Larrey of whom I have made mention above seems to think the patient better off, even without the seaton, with all the respect I have for so great a Surgeon, I am compelled to dissent here, and strenuously advise it wherever there is the chance of success.

Dr. Dorsey (to whom every student of surgery in this country is under obligations for the assistance afforded them by his excellent work) says that the operation, mentioned by Boyer of cutting down, to the ends of the bones is in the fore arm or leg impracticable on account of the difficulty of seperating from the integuments, the two bones, of which each of these

parts is composed, and of the numerous nerves and arteries, in danger of being wounded in the large incisions."

With the greatest deference for such high authority, I must beg leave to state, that this operation however has been performed in Edinburgh I was informed by my preceptor that while he was attending lectures there, a woman underwent the operation, in whose forearm the interosseous substance as was suspected, had presented the obstacle, this was cleared and the ends of the bone trimmed, and placed in contact, the woman completely recovered the use of her limb, without any difficulty, he saw her before and after the operation.

At the time that the bone is fractured it is sometimes injured in such a manner, that Gangrene and Mortification, are unavoidable, or the protrusion of the bone may cause such a laceration of the parts, as to bring it on, great

violence used in making extension, improper or negligent treatment, awkwardness in removing splinters of bone &c uneasy position of the limb, painful applications, or drapings, neglect of the antiphlogistic plan, of anodynes &c

When Mortification is likely to be the result of injury done to the limb at the time of the fracture, immediate amputation should be performed, or should we wait till it has commenced, we should be determined by the species of Gangrene, whether to adopt it now, or wait till seperation takes place.

In the dry Gangrene, which indicates the seperation of the dead from the living parts, by a line of demarkation, and which penetrates nerves, muscles &c the seperation must appear before the

Surgeon is justifiable in performing the operation. In the gangrene proceeding from wounds, called moist or traumatick so well described by Larrey, and which does not affect the deep seated parts, it would be in vain to wait for this process of nature, and the sooner we amputate the better as its progress is extremely rapid.#

In the dry gangrene although we wait the operations of Nature, yet as soon as she has indicated the fulfilment of her task, by a well defined line, all haste should be made, in removing the dead parts for fear of injury from the absorption the putrescent matter, so generally yeilded by gangrenous masses.

We may sometimes arrest the progress of gangrene (according to Mr. Pott) and gain a seperation of the sound from

See Sir Wm Barnes case in his memoir on gangrene page 215 vol II

the unsound parts, when it is not the immediate effect, of the torn state of the parts, but of a great degree of inflammation, general habit in bad condition, inconvenient posture or improper treatment of the limb. In order to do this we must attend to the causes producing this state of things, the bilious and sanguine will require depletion, and evacuation, we must assist the weak, and debilitated, by proper regimen and medicines, and correct any existing errors, in the treatment of the limb or wound, the judgement of the practitioner, must be his guide in particular cases.

He will make use of Venesection, and the antiphlogistic plan in general to subdue inflammation, and anodynes will be required for irritation and uneasiness, and the Peruvian Bark is

useful with cordial medicines, at some periods, and cooling at others, the most soothing applications, relaxing cataplasms &c will be necessary for tension and irritation of the wound.

When Mortification is likely to ensue or in consequence of a high degree of inflammation, the employment of a blister is recommended by Dr Physick who from much experience is fully authorized to speak well of it, it should be a large one or perhaps our intentions may not be answered.

Stimulating antiseptic applications are generally denounced as prejudicial, for inflammatory tension, is not removed, pain lessened swallen parts relaxed, nor a kind suppuration, and of course a seperation of the parts produced by them, indications which we should endeavour to fulfil.

Warm irritating applications have been used in Gunshot wounds under an erroneous persuasion that they were poisonous, and that applications of this kind assisted nature in throwing off the diseased parts.

Surgeons are more rationally treat Gunshot like other lacerated wounds.

That there are three points of time or stages of a severe compound fracture, in which amputation will be necessary, seems to be generally agreed on by practitioners, and a nice judgement is required for their safe and correct observance.

Immediately after the accident previous to inflammation of the parts seems to be the first proper time, a

neglect of this change, is apt to have for its consequence, gangrene, or a large suppuration, with formation and lodgement of matter. It has been already shewn how we should manage with respect to amputation, in gangrene and mortification, and in the case of profuse suppuration, we must be guided by the strength of the patient, compared with the state and discharge of the fracture or wound.

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Having now brought my remarks to a conclusion may I hope that they will answer their end and that the indulgence of which they stand so much in need, will be kindly extended to them.